

Climate Change and the Greenhouse Effect Fact Sheet

What is climate change and why is it happening?

* **When we talk about 'climate change' we're talking about the changes to our climate over long periods of time.** It doesn't just mean having a wet summer or having a couple of really blowy days every now and then; climate change means long-term changes to the climate that affects rain patterns or temperatures.

* **Why is it happening?** Most scientists accept that climate change is linked to the human-caused greenhouse effect. Higher atmospheric concentrations of greenhouse gases, such as carbon dioxide, cause more heat to be trapped. As a result the lower atmosphere warms. This is known as the enhanced greenhouse effect. Basically, we're making too much pollution for the earth to deal with naturally and we're changing the state of our planet.

* **Believe it or not?** True, the climate has experienced changes in the past. It may have been a meteor, or a volcano, or some other dramatic event thrown up by our planet (or one from afar), but never before have human activities been responsible for these changes. If it weren't so disastrous it would almost be impressive!



What are the greenhouse gases and where do they come from?

* **Water vapour** is the most common greenhouse gas. But others that are very important too. Some occur naturally and some come from human activity.

* **Carbon Dioxide or CO₂** is the most significant greenhouse gas released by human activities. Fossil fuel burning has produced about three-quarters of the increase in CO₂ from human activity over the past 20 years. Most of the rest is due to land-use change, particularly deforestation.

* **Methane** is produced when vegetation is burned, digested or rotted with no oxygen present. Garbage dumps, rice paddies, and burping and farting cows and other livestock also release lots of methane.

* **Nitrous oxide** can be found naturally in the environment but human activities are increasing the amounts. Nitrous oxide is released when chemical fertilizers and manure are used in agriculture.

* **Halocarbons** are a family of chemicals that include CFCs (which also damage the ozone layer), and other human-made chemicals that contain chlorine and fluorine. (1)



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Did you know?

* **If no action is taken** to reduce emissions the level of greenhouse gases in the atmosphere could be double of those experienced in pre-industrial times by 2035. (2)

* **Butterflies, dragonflies, moths, beetles**, and other insects are now living at higher latitudes and altitudes, where once it was too cold to survive. (3)

* **The 11 warmest years on record** have all occurred in the last 13 years, with 2005 the hottest yet. (4)

* Although **total annual emissions from developing countries** are expected to eventually exceed those of developed countries their per capita emissions will remain much lower. (5)

* **The risks of the worst impacts of climate change** can be substantially reduced if greenhouse gas levels in the atmosphere are stabilised at current levels. (6)

* **The polar bear is** now listed as a vulnerable species by the IUCN mainly due to expected decline in sea ice. (7)

* **Polar ice in both the Antarctic and Arctic Circles is melting** at a much more rapid rate than previously thought. Up to 15% per year of this ice is thought to be lost due to climate change and it is believed by some scientists that an ice free Arctic and Antarctic summer is a genuine threat by the year 2040. (8)

* A study by Nature concluded that climate change could place **35% of all land animals and plants on the planet in danger of extinction** over the next 50 years. (9)

* **Warming temperatures** are already causing the retreat of glaciers and sea-ice. (10)

* **Snow depth in the Australian Alps** has declined 40 per cent in the last 40 years. (11)

* We can experienced an **average sea level rise of 20 mm per decade** over the last 50 years, and can expect sea levels to continue rising. (12)

* **Warming oceans will cause an increase in coral bleaching**, and possibly the loss of vast and important coral ecosystems like the Great Barrier Reef. (13)



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What can you do?

Individuals can:

- * **Calculate your current impact.** Visit Climate Positive to calculate your carbon footprint: www.climatepositive.org
- * **Make simple changes in your energy use** such as turning lights off, replace light bulbs with new energy efficient bulbs, and unplugging electronic devices when not in use.
- * **Leave the car at home** and walk, cycle and use public transport where possible to reduce carbon dioxide emissions.
- * **Switch to green power:** switching to energy produced by renewable resources is the simplest and most effective way to avoid producing carbon emissions.
- * **Do you really need it?** Think carefully about all your purchases, and where possible, choose the greenest option.
- * **Reduce, reuse and recycle.** Cut the waste, save on resources and eliminate unnecessary emissions.



Businesses can:

- * **Introduce technologies** and techniques to cut their operational energy use.
- * **Improve the energy efficiency** of products they produce such as electrical appliances and vehicles.
- * **Become carbon neutral** by offsetting their emissions.
- * **Save money** by reducing their energy use.

Governments can:

- * **Introduce policies and legislation that:**
 - Support and reward household and business use of alternative energy sources such as wind and solar power.
 - Promote energy efficiency and conservation by businesses and households.
 - Establish carbon-trading schemes.

Visit www.coolaustralia.org for more information about climate change and the greenhouse effect.

For more information on how you can help our environment, or to make some suggestions of your own, please go to www.coolaustralia.org



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